

METHOD AND APPARATUS FOR DETERMINING THE DIELECTRIC CONSTANT OF A LOW PERMITTIVITY DIELECTRIC ON A SEMICONDUCTOR WAFER

ABSTRACT OF THE DISCLOSURE

In an apparatus and method for determining a permittivity of a dielectric layer on a semiconductor wafer, a thickness of the dielectric layer is determined and a topside of the wafer is moved into contact with a spherical portion of an at least partially spherical and electrically conductive surface. An electrical stimulus is applied between the electrically conductive surface and the semiconducting material. A capacitance of a capacitor comprised of the electrically conductive surface, the semiconductor material and the dielectric layer is determined from the applied stimulus. A permittivity of the dielectric layer is then determined as a function of the capacitance and the thickness of the dielectric layer.